

Patent claims

1. Self-opener closure for composite packagings and for container spouts sealed with film material, comprising a spout (2) which is mountable on a composite packaging or on a container spout sealed with film material, an associated rotary cap (1) and a self-opener (3) being arranged within the spout (2), said self-opener (3) being rotatable by means of the rotary cap (1), *characterised in that* the inner side of the spout (2) is provided with at least two guide webs (20) being arranged around its inner circumference and having varying inclines, so that the sleeve-shaped self-opener (3), at whose outer side there are arranged at least two guide ribs (12) each having a guide surface (15), and when continuously rotating within the spout (2) guiding its guide surfaces (15) at the guide webs (20), initially follows a downwardly directed movement along a steep screw-path which hereafter goes over into a pure horizontal rotational movement.
2. Self-opener closure for composite packagings and for container spouts sealed with film material according to claim 1, *characterised in that* the self-opener is formed as a sleeve (3), comprising at its lower edge at least one lancing mandrel (10) having a sharp, downwardly projecting tip (24), and which comprises a sharp edge (11) at its flank showing in a counter-clockwise circumferential direction when seen from above.
3. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of the previous claims, *characterised in that* the rotary cap (1) comprises at its inner side at least two detached cylinder wall segments (17, 18) being spaced apart from each other in circumferential direction, and that the self-opener is formed as a sleeve (3), which comprises at the inner side of its upper edge at least one straight or angled web (23) extending radially from the sleeve axis and traversing the diameter, which web (23) fits between the spaces of the cylinder wall segments (17, 18) at the rotary cap (1), whereby the sleeve wall is arranged between the cylinder wall segments (17, 18) and the spout walls, and that the sleeve (3) has at its outer side at least two continuous guide ribs (12) which are arranged in distribution

over its circumference, which cooperate with the same number of guide webs (20) being arranged at the inner side of the spout (2) in distribution over its circumference, in such a manner that when the rotary cap (1) is rotated, its torque is transmitted over the lateral limiting edges of the cylinder wall segments (17, 18) to the traversing web (23) and thus to the sleeve (3), and that the guide ribs (12) at the sleeve (3) and spout (2) are formed such, that when rotated, the sleeve (3) initially describes a steep downwardly directed screwline movement and subsequently assumes a purely rotational movement in a horizontal plane.

4. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of the previous claims, *characterised in that* the rotary cap (1) comprises at its inner side two detached cylinder wall segments (17, 18) being spaced apart from each other in circumferential direction, and that the self-opener is formed as a sleeve (3), which comprises at the inner side of its upper edge at least one traversing web (23) which traverses its diameter, said traversing web (23) fits between the spaces of the cylinder wall segments (17, 18) at the rotary cap (1), whereby the sleeve wall is arranged between the cylinder wall segments (17, 18) and the spout walls, and that the sleeve (3) at its outer side comprises at least two continuous guide ribs (12) arranged in distribution over its circumference, which interact with the same number of guide webs (20) which are arranged at the inner side of the spout (2) in distribution over its circumference, in such a manner, that when the rotary cap (1) is rotated its torque is transmitted over the lateral limiting edges of the cylinder wall segments (17, 18) to the traversing web (23) and thus to the sleeve (3) and that the guide webs (12) at the sleeve (3) and spout (2) are formed such, that when rotated, the sleeve (3) firstly describes a steep downwardly directed screwline and subsequently assumes a purely rotational movement in a horizontal plane.

5. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of claims 1 or 2, *characterised in that* the rotary cap (1), at the inner side of its cap lid, comprises three free-standing cylinder wall segments (17, 18) being spaced apart from each other in a circumferential direction, and that the self-opener is formed as a sleeve (3),

which comprises at the inner side of its upper edge a star-shaped web (23) composed of three webs extending radially from the sleeve axis and which fit between the spaces of the cylinder wall segments (17, 18) at the rotary cap (1), whereby the sleeve wall is arranged between the cylinder wall segments (17, 18) and the spout walls, and that the sleeve (3) at its outer side comprises at least two continuous guide ribs (12) arranged in distribution over its circumference, which interact with the same number of guide webs (20) which are arranged at the inner side of the spout (2) in distribution over its circumference, in such a manner, that when the rotary cap (1) is rotated its torque is transmitted over the lateral limiting edges of the cylinder wall segments (17, 18) to the traversing web (23) and thus to the sleeve (3) and that the guide webs (12) at the sleeve (3) and spout (2) are formed such, that when rotated, the sleeve (3) firstly describes a steep downwardly directed screwline and subsequently assumes a purely rotational movement in a horizontal plane.

6. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of the previous claims, *characterised in that* the lower edges of the cylinder wall segments (17, 18) each form a like curve sloping in an axial direction with respect to the cylinder.
7. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of the previous claims, *characterised in that* the guide ribs (12) at the self-opener sleeve (3) and the guide webs (20) at the spout (2) are designed such, that the guide ribs (12) at the outer wall of the self-opener sleeve (3) are each composed of a horizontal section (13) and an adjoining vertical section (14), whereby the tip of the right angle formed by these sections (13, 14) is bevelled at an angle of 45° with respect to the outer side of its legs, which forms a guide surface (15), and that the guide webs (20) at the inner wall of the spout (2) are each composed of a section (22) extending with a constant inclination at the circumferential wall and an adjoining horizontal section (21).
8. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of the previous claims, *characterised in that*

at the lower inner edge of the spout (2) there is provided a recess (25) which is bordered by a ramp (26), and which is intended for receiving the end of a guide rib (12) of the self-opener sleeve (3) in the end position of its rotational movement.

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9. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of the previous claims, *characterised in that* the sleeve (3) at its outer side comprises three or four continuous guide ribs (12) arranged in distribution over its circumference, which interact with the same number of guide webs (20) which are arranged at the inner side of the spout (2) in distribution over its circumference, in such a manner, that when the rotary cap (1) is rotated its torque is transmitted over the lateral limiting edges of the cylinder wall segments (17, 18) to the traversing web (23) and thus to the sleeve (3) and that the guide webs (12) at the sleeve (3) and spout (2) are formed such, that when rotated, the sleeve (3) firstly describes a steep downwardly directed screwline and subsequently assumes a purely rotational movement in a horizontal plane.

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10. Self-opener closure for composite packagings and for container spouts sealed with film material according to one of the previous claims, *characterised in that* the discharge spout (2) is a threaded spout and the rotary cap (1) is an associated threaded cap, or that the discharge spout (2), together with the rotary cap (1), form a bayonet coupling, and that the discharge spout (2) in its lower region is provided with a bead (7) which is obliquely angled at its upper side, and at its lower side forms an angular rim (8), and that the rotary cap (1) comprises at its lower edge a guarantee strip (4) moulded thereto by thin material bridges (5) designed to be predetermined breaking points, which can be irreversibly pushed over the bead (7).

Abstract

The self-opener closure comprises a spout (2) having a projecting lower rim (9) which
5 is to be moulded or glued to a composite packaging, an associated rotary cap (1) as
well as a self-opener sleeve (3) arranged within the spout (2). This self-opener sleeve
(3) can be made to rotate by the rotary cap (1). The inner side of the spout (2) is
provided with four guide webs having varying inclines arranged over its inner
circumference. These interact with specially formed guide ribs at the outer wall of the
10 self-opener sleeve (3), which brings about that the self-opener sleeve (3), when
continuously rotated in the inside of the spout (2), and by being guided at these guide
ribs, describes an uneven downwardly directed movement, which superposes its
rotational movement. Thus, the self-opener sleeve (3) first pierces the paper or
cardboard laminate with the tip (24) of its lancing mandrel in a steep, screwline
15 downwardly directed movement, and thereafter completes a horizontal rotational
movement about 340°, whilst it cuts a circular disk out of the laminate with its sharp
cutting edge, and thereafter pivots this downwards and retains it in this position.

(Figure 3)